

What is claimed is:

1. A high-speed/high-reliability Ether transmission system comprising a plurality of Ether cables, a local bus connected to an information processing device and having a higher speed than that of said Ether cables, and an I/F apparatus, said Ether cables being connected through said I/F apparatus to said local bus,

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wherein said I/F apparatus comprises a plurality of Ether ports connected to said Ether cables, a bus port connected to said local bus, a controller connected to said Ether ports and said bus port, and a MAC to port table memory for storing a corresponding relationship between a MAC address to which an Ether frame is to be transferred and said Ether ports or said bus port to which said frame is to be transferred, and

wherein said controller refers to said MAC to port table memory when it receives an Ether frame having a MAC address to which said frame is to be transferred, and if said MAC address to which said frame is to be transferred is stored in said MAC to port table memory, it transmits said Ether frame to a port to which said frame is to be transferred corresponding to said MAC address, or if said MAC address to which said frame is to be transferred is not stored, it transmits said Ether

25 frame to ports except a port which has received said  
Ether frame and stores a corresponding relationship  
between a MAC address from which said Ether frame has  
been transferred and said port which has received said  
Ether frame in said MAC to port table memory, and when it  
30 receives an Ether frame having a broadcast MAC address,  
it transmits said Ether frame to all ports except a port  
which has received said Ether frame and stores a  
corresponding relationship between a MAC address from  
which said Ether frame has been transferred and said port  
35 which has received said Ether frame in said MAC to port  
table memory.

2. A high-speed/high-reliability Ether  
transmission system comprising a network including  
information processing devices and hubs connected through  
Ether cables, a local bus having a higher speed than that  
5 of said Ether cable, and an I/F apparatus, said network  
being connected through said I/F apparatus to said local  
bus,

wherein said I/F apparatus comprises a  
plurality of Ether ports connected to said Ether cables,  
10 a bus port connected to said local bus, a controller  
connected to said Ether ports and said bus port, and a  
MAC to port table memory for storing a corresponding

relationship between a MAC address to which an Ether  
frame is to be transferred and said Ether ports or said  
15 bus port to which said frame is to be transferred, and  
wherein said controller refers to said MAC to  
port table memory when it receives an Ether frame having  
a MAC address to which said frame is to be transferred,  
and if said MAC address to which said frame is to be  
20 transferred is stored in said MAC to port table memory,  
it transmits said Ether frame to a port to which said  
frame is to be transferred corresponding to said MAC  
address, or if said MAC address to which said frame is to  
be transferred is not stored, it transmits said Ether  
25 frame to all ports except a port which has received said  
Ether frame and stores a corresponding relationship  
between a MAC address from which said Ether frame has  
been transferred and said port which has received said  
Ether frame in said MAC to port table memory, and when it  
30 receives an Ether frame having a broadcast MAC address,  
it transmits said Ether frame to all ports except a port  
which has received said Ether frame and stores a  
corresponding relationship between a MAC address from  
which said Ether frame has been transferred and said port  
35 which has received said Ether frame in said MAC to port  
table memory.

3. A high-speed/high-reliability Ether transmission system comprising a plurality of Ether cables connected to plurality of information processing devices, respectively, a local bus connected to another  
5 information processing device and having a higher speed than that of said Ether cables, and an I/F apparatus, said Ether cables being connected through said I/F apparatus to said local bus,

wherein said I/F apparatus comprises a  
10 plurality of Ether ports connected to said Ether cables, a bus port connected to said local bus, a controller connected to said Ether ports and said bus port, and a MAC to port table memory for storing a corresponding relationship between a MAC address to which an Ether  
15 frame is to be transferred and said Ether ports or said bus port to which said frame is to be transferred, and

wherein said controller refers to said MAC to port table memory when it receives an Ether frame having a MAC address to which said frame is to be transferred,  
20 and if said MAC address to which said frame is to be transferred is stored in said MAC to port table memory, it transmits said Ether frame to a port to which said frame is to be transferred corresponding to said MAC address, or if said MAC address to which said frame is to  
25 be transferred is not stored, it transmits said Ether

frame to all ports except a port which has received said Ether frame and stores a corresponding relationship between a MAC address from which said Ether frame has been transferred and said port which has received said Ether frame in said MAC to port table memory, and when it receives an Ether frame having a broadcast MAC address, it transmits said Ether frame to all ports except a port which has received said Ether frame and stores a corresponding relationship between a MAC address from which said Ether frame has been transferred and said port which has received said Ether frame in said MAC to port table memory.

4. The high-speed/high-reliability Ether transmission system according to claim 1, wherein said controller also stores a counter value for specifying one of a plurality of said Ether ports in turn at transmission of an Ether frame to said Ether ports when said plurality of Ether ports correspond to a single MAC address to which said frame is to be transferred in a corresponding relationship between a MAC address to which said frame is to be transferred and Ether ports to which said frame is to be transferred stored in said MAC to port table memory, and increments and updates said counter value each time an Ether frame is transferred to

one of said plurality of Ether ports.

5. The high-speed/high-reliability Ether transmission system according to claim 2, wherein said controller also stores a counter value for specifying one of a plurality of said Ether ports in turn at

5 transmission of an Ether frame to said Ether ports when said plurality of Ether ports correspond to a single MAC address to which said frame is to be transferred in a corresponding relationship between a MAC address to which said frame is to be transferred and Ether ports to which

10 said frame is to be transferred stored in said MAC to port table memory, and increments and updates said counter value each time an Ether frame is transferred to one of said plurality of Ether ports.

6. The high-speed/high-reliability Ether transmission system according to claim 3, wherein said controller also stores a counter value for specifying one of a plurality of said Ether ports in turn at

5 transmission of an Ether frame to said Ether ports when said plurality of Ether ports correspond to a single MAC address to which said frame is to be transferred in a corresponding relationship between a MAC address to which said frame is to be transferred and Ether ports to which

10 said frame is to be transferred stored in said MAC to  
port table memory, and increments and updates said  
counter value each time an Ether frame is transferred to  
one of said plurality of Ether ports.

7. The high-speed/high-reliability Ether  
transmission system according to claim 1, wherein an  
information processing device connected to said Ether  
cable transmits an ARP request frame having a broadcast  
5 MAC address at first transmission of an Ether frame.

8. The high-speed/high-reliability Ether  
transmission system according to claim 2, wherein an  
information processing device connected to said Ether  
cable transmits an ARP request frame having a broadcast  
5 MAC address at first transmission of an Ether frame.

9. The high-speed/high-reliability Ether  
transmission system according to claim 3, wherein an  
information processing device connected to said Ether  
cable transmits an ARP request frame having a broadcast  
5 MAC address at first transmission of an Ether frame.

10. The high-speed/high-reliability Ether  
transmission system according to claim 4, wherein an

information processing device connected to said Ether  
cable transmits an ARP request frame having a broadcast  
5 MAC address at first transmission of an Ether frame.

11. The high-speed/high-reliability Ether  
transmission system according to claim 1, wherein said  
controller stores a corresponding relationship between a  
MAC address of said information processing device  
5 connected to said local bus and said bus port in said MAC  
to port table memory directly from said information  
processing device connected to said bus port at switching  
on power of said information processing device instead of  
storage based on a received Ether frame.

12. The high-speed/high-reliability Ether  
transmission system according to claim 2, wherein said  
controller stores a corresponding relationship between a  
MAC address of said information processing device  
5 connected to said local bus and said bus port in said MAC  
to port table memory directly from said information  
processing device connected to said bus port at switching  
on power of said information processing device instead of  
storage based on a received Ether frame.

13. The high-speed/high-reliability Ether



transmission system according to claim 3, wherein said controller stores a corresponding relationship between a MAC address of said information processing device  
5 connected to said local bus and said bus port in said MAC to port table memory directly from said information processing device connected to said bus port at switching on power of said information processing device instead of storage based on a received Ether frame.

14. The high-speed/high-reliability Ether transmission system according to claim 4, wherein said controller stores a corresponding relationship between a MAC address of said information processing device  
5 connected to said local bus and said bus port in said MAC to port table memory directly from said information processing device connected to said bus port at switching on power of said information processing device instead of storage based on a received Ether frame.

15. The high-speed/high-reliability Ether transmission system according to claim 5, wherein said controller stores a corresponding relationship between a MAC address of said information processing device  
5 connected to said local bus and said bus port in said MAC to port table memory directly from said information

processing device connected to said bus port at switching on power of said information processing device instead of storage based on a received Ether frame.

16. The high-speed/high-reliability Ether transmission system according to claim 1, wherein contents stored in said MAC to port table except a corresponding relationship between a MAC address of said information processing device connected to said local bus and said bus port are initialized at predetermined intervals.

17. The high-speed/high-reliability Ether transmission system according to claim 2, wherein contents stored in said MAC to port table except a corresponding relationship between a MAC address of said information processing device connected to said local bus and said bus port are initialized at predetermined intervals.

18. The high-speed/high-reliability Ether transmission system according to claim 3, wherein contents stored in said MAC to port table except a corresponding relationship between a MAC address of said information processing device connected to said local bus

and said bus port are initialized at predetermined intervals.

19. The high-speed/high-reliability Ether transmission system according to claim 4, wherein contents stored in said MAC to port table except a corresponding relationship between a MAC address of said  
5 information processing device connected to said local bus and said bus port are initialized at predetermined intervals.

20. The high-speed/high-reliability Ether transmission system according to claim 11, wherein contents stored in said MAC to port table except a corresponding relationship between a MAC address of said  
5 information processing device connected to said local bus and said bus port are initialized at predetermined intervals.

21. An I/F apparatus for connecting a network including information processing devices connected through Ether cables to another information processing device through a local bus having a higher speed than  
5 that of said Ether cables, comprising:

a plurality of Ether ports connected to said

Ether cables;

a bus port connected to said local bus;

a controller connected to said Ether ports and  
10 to said bus port; and

a MAC to port table memory for storing a  
corresponding relationship between a MAC address to which  
an Ether frame is to be transferred and said Ether ports  
or said bus port to which said frame is to be transferred,

15 wherein said controller refers to said MAC to  
port table memory when it receives an Ether frame having  
a MAC address to which said frame is to be transferred,  
and if said MAC address to which said frame is to be  
transferred is stored in said MAC to port table memory,  
20 it transmits said Ether frame to a port to which said  
frame is to be transferred corresponding to said MAC  
address, or if said MAC address to which said frame is to  
be transferred is not stored, it transmits said Ether  
frame to all ports except a port which has received said  
25 Ether frame and stores a corresponding relationship  
between a MAC address from which said Ether frame has  
been transferred and said port which has received said  
Ether frame in said MAC to port table memory, and when it  
receives an Ether frame having a broadcast MAC address,  
30 it transmits said Ether frame to all ports except a port  
which has received said Ether frame and stores a

corresponding relationship between a MAC address from  
which said Ether frame has been transferred and said port  
which has received said Ether frame in said MAC to port  
35 table memory.

22. The I/F apparatus according to claim 21,  
wherein said controller also stores a counter value for  
specifying one of a plurality of said Ether ports in turn  
at transmission of an Ether frame to said Ether ports  
5 when said plurality of Ether ports correspond to a single  
MAC address to which said frame is to be transferred in a  
corresponding relationship between a MAC address to which  
said frame is to be transferred and Ether ports to which  
said frame is to be transferred stored in said MAC to  
10 port table memory, and increments and updates said  
counter value each time an Ether frame is transferred to  
one of said plurality of Ether ports.

23. The I/F apparatus according to claim 21,  
wherein an information processing device connected to  
said Ether cable transmits an ARP request frame having a  
broadcast MAC address at first transmission of an Ether  
5 frame.

24. The I/F apparatus according to claim 22,

wherein an information processing device connected to  
said Ether cable transmits an ARP request frame having a  
broadcast MAC address at first transmission of an Ether  
5 frame.

25. The I/F apparatus according to claim 21,  
wherein said controller stores a corresponding  
relationship between a MAC address of said information  
processing device connected to said local bus and said  
5 bus port in said MAC to port table memory directly from  
said information processing device connected to said  
local bus at switching on power of said information  
processing device instead of storage based on a received  
Ether frame.

26. The I/F apparatus according to claim 22,  
wherein said controller stores a corresponding  
relationship between a MAC address of said information  
processing device connected to said local bus and said  
5 bus port in said MAC to port table memory directly from  
said information processing device connected to said  
local bus at switching on power of said information  
processing device instead of storage based on a received  
Ether frame.

27. The I/F apparatus according to claim 23,  
wherein said controller stores a corresponding  
relationship between a MAC address of said information  
processing device connected to said local bus and said  
5 bus port in said MAC to port table memory directly from  
said information processing device connected to said  
local bus at switching on power of said information  
processing device instead of storage based on a received  
Ether frame.

28. The I/F apparatus according to claim 24,  
wherein said controller stores a corresponding  
relationship between a MAC address of said information  
processing device connected to said local bus and said  
5 bus port in said MAC to port table memory directly from  
said information processing device connected to said  
local bus at switching on power of said information  
processing device instead of storage based on a received  
Ether frame.

29. The I/F apparatus according to claim 21,  
wherein contents stored in said MAC to port table memory  
except a corresponding relationship between a MAC address  
of said information processing device connected to said  
5 local bus and said bus port are initialized at

predetermined intervals.

30. The I/F apparatus according to claim 22,  
wherein contents stored in said MAC to port table memory  
except a corresponding relationship between a MAC address  
of said information processing device connected to said  
5 local bus and said bus port are initialized at  
predetermined intervals.

31. The I/F apparatus according to claim 23,  
wherein contents stored in said MAC to port table memory  
except a corresponding relationship between a MAC address  
of said information processing device connected to said  
5 local bus and said bus port are initialized at  
predetermined intervals.

32. The I/F apparatus according to claim 25,  
wherein contents stored in said MAC to port table memory  
except a corresponding relationship between a MAC address  
of said information processing device connected to said  
5 local bus and said bus port are initialized at  
predetermined intervals.